

# NOTES ON THE BOTANY OF THE INTERIOR OF NEW SOUTH WALES.

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PART VI.—FROM MARSDEN TO NARRANDERA.

(Plates viii.-x.)

The distance from Marsden to Wyalong is about 20 miles westerly. The country is generally level, except for a ridge of sedimentary formation at about half-way. Various trees and shrubs noticed were:—*Eremophila Mitchelli* (Budtha or Sandalwood), *Geijera parviflora* (Wilga, getting scarce), *Heterodendron oleaefolium* (Rosewood), *Casuarina Luehmanni* (Bull Oak), *C. Cambagei* (Belah), *Callitris robusta* (White or Cypress Pine), *Sterculia diversifolia* (Currajong), and *Myoporum deserti* (Dogwood). The above were all passed between Marsden and the 10-mile post from Wyalong. On the ridge between the 10- and 8-mile posts from Wyalong were *Grevillea floribunda*, *Calythrix tetragona*, *Callitris calcarata* (Mountain Pine), *Casuarina quadrivalvis* (She Oak or Mountain Oak), *Exocarpus cupressiformis* (Native Cherry), *Caladenia cœrulea* (small blue Orchid), *Dodonaea viscosa* (Hopbush), and *Prostanthera ovalifolia*, R.Br., a shrub about five feet high, covered with blue flowers in September. Between the 8- and 4-mile posts were *Hakea leucoptera* (Needlewood), *Cassia eremophila*, *Casuarina Cambagei*, *C. Luehmanni*, *Callitris robusta*, *Bertya Cunninghamii* (Broom Bush), *Heterodendron oleaefolium*, *Melaleuca parviflora*, Lindl., and *Eriostemon difformis*. Between the 4-mile post and Wyalong the following were noticed:—*Calythrix tetragona*, *Melaleuca uncinata* (Youngie Bush), *Fusanus acuminatus* (Quandong). *Myoporum deserti*, *Bursaria spinosa*, Cav. (Black Thorn), *Sterculia diversifolia*, and

a few trees of *Eremophila longifolia* (Emu Bush). The plants of *Prostanthera ovalifolia* and *Bursaria spinosa* were the first seen in coming from Bourke.

In the drought of 1895, when all grass and herbage had disappeared, the rabbits in the Wyalong district turned their attention to the bark of various shrubs and small trees, but the species which suffered most from these rodents was *Myoporum deserti* (Dogwood). The bark was eaten off right round the stem, and as far up as Bunny could reach when standing on two legs. In this way the lower parts of these trees were whitened as if covered with white stockings, and presented a striking appearance when growing in clusters in the forest. Scarcely a tree of this species escaped, and the great quantity of whitened stems bore testimony both to the numbers and energy of their assailants, while a great many of the trees died from this novel process of ringbarking. From various sources I gathered that the rabbits did not thrive on this bark, but simply prolonged existence.

Throughout various localities in my western travels I have seen instances of rabbits eating the bark off the trunks and exposed roots of very many trees and shrubs, but have never noticed their showing such a decided preference for any other species as was shown for this one in the Wyalong district. Usually their favourite bark can be detected in any forest by noticing which trees are most constantly attacked. The observations of others on this point would be of interest. In the Cobar district *Capparis Mitchelli* (Wild Orange) was one of the shrubs most constantly attacked. The various Eucalypts, including the Mallees, are evidently not in favour with them, as these are left untouched while anything else can be obtained.

*Myoporum deserti* has been noticed nearly the whole way from Bourke. In the Nymagee district it is often found growing near the various Mallees, but is also quite common in places to the eastward where these Eucalypts do not grow. It is usually known as Dogwood, though that name is given to other trees in different localities. In the Lachlan district the chief flowering time for this species is October, and in November the ground may

be seen in places whitened with the fallen petals. More than once I have met with Western men who have confused these trees with the Budtha or Sandalwood, *Eremophila Mitchelli*; but by exercising a little care the two species are easily separated without reference to flowers or fruits. The general appearance of Budtha is paler than that of Dogwood both as regards bark and foliage. The former flowers a little earlier than the latter, though of course occasional flowers of either may be found during a period extending over several months.

*Myoporum deserti* contains some kind of resinous substance which may at times be seen exuding from the bark. I knew of an instance in the Forbes district where a flock of domestic turkeys were in the habit of making periodical visits to a number of these little trees in order to feed on this exudation while it was fresh. Possibly the same substance was also the attraction for the rabbits.\*

In the following list of Acacias passed between Marsden and Wyalong their positions are given in regard to the mile-posts; those Acacias whose names precede any given mile-post were seen before that post was reached. The various species were:—*A. stenophylla* (on the Bland Creek only), *A. pendula* (Boree or Myall); 13 m. *A. homalophylla* (Yarran); 11 m. *A. dealbata* (green variety), *A. hakeoides*, *A. doratoxylon* (Currawong); 10 m. *A. cardiophylla*, *A. Cunn.*; 8 m. *A. homalophylla*; 7 m. *A. Oswaldi* (Miljee); 5 m. *A. rigens*, *A. ixiophylla*, Benth.(?); 4 m. *A. difformis*, Baker (Black Wattle); 2 m. and *A. decora*.

*A. pendula* ceases on this road with the river soil at about 13½ miles from Wyalong, but occurs again to the south and south-west. As previously stated (Part ii., p. 719, and Part v., p. 690), this species is more often called Boree south of the Lachlan than Myall, while *A. homalophylla* is here known both as Yarran and Myall.

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\* For some notes on exudates from *M. platycarpum*, by the late Mr. K. H. Bennett, see these Proceedings, vii., 1882, pp. 350-351.

*A. cardiophylla* was found on the sedimentary ridge previously mentioned, and was not noticed in any other part of the country described in these papers. It was flowering early in September, and in general appearance, as well as size, much resembles *A. pubescens*, R.Br., of the Parramatta district.

*A. rigens* was found growing as trees up to 12 feet high with a peculiar rough crinkled bark, and needle-shaped leaves generally having straight points. The trees were covered with flowers early in September.

*A. ixioophylla* (?) was also flowering at the same time, but is a smaller tree, with fairly smooth grey bark and pale-coloured leaves with numerous parallel veins. It was not seen previously, and there is some doubt, in the absence of pods, as to its identity.

*A. difformis* was also first noticed here. This species, which is common in the Wyalong district, somewhat resembles *A. hakeoides*, but has decidedly darker bark and foliage. The latter was flowering in August and September, but young pods were found on *A. difformis*, showing that it must have flowered some time previously. These trees, which average about 10 or 12 feet high, often form scrubs extending over many acres, and sufficiently thick to afford shelter for the nests of the Mallee Hen (*Leipoa ocellata*).

The Eucalypts noticed between Marsden and Wyalong were:—*E. rostrata* (River Red Gum), *E. Woollsiana* (Black or Narrow-leaved Box); 10 m. *E. sideroxylon* (Ironbark), *E. tereticornis*, var. *dealbata* (Gum); 8 m. *E. conica* (Apple Box); 4 m. *E. dumosa* (White Mallee), *E. sideroxylon* (Ironbark), *E. populifolia* (Box, scarce), *E. Behriana*, F.v.M., and a few trees of *E. melliodora* (Yellow Box).

The district around Wyalong is interesting to lovers of either geology or botany. The formation in which the rich gold reefs occur is granite, whereas many, though not all, of the reefing fields in New South Wales are in sedimentary formations, very often Silurian slate, or, if in Plutonic, the rock is often other than granite. The depth to which the rock has decomposed, and the level at which water too salt for use is found, are among the

points of geological interest. Plants are very plentiful, and many are met with here which do not occur to the eastward, but extend across into South Australia. The locality may be regarded as being on the eastern boundary of the true interior flora.

Various trees and shrubs noticed around Wyalong and towards Barmedman were :—*Bertya Cunninghamii*, *Sterculia diversifolia*, *Myoporum deserti*, *Melaleuca parviflora*, *M. uncinata*, *Olearia pimeloides*, A. Cunn., *O. lepidophylla*, Benth., *Eriostemon difformis*, *Philotheca ciliata*, Hook., *Bursaria spinosa*, *Pittosporum phillyraeoides*, *Exocarpus aphylla*, *Phebalium glandulosum*, *P. obcordatum*, A. Cunn., *Callitris robusta*, *C. calcarata*, *Hakea leucoptera*, *Cassia eremophila*, *Calythrix tetragona*, *Casuarina Luehmanni*, *C. Cambagei*, *Cassytha* sp., *Dodonaea* sp., *Heterodendron oleaefolium*, *Templetonia egena*, Benth., *Fusanus acuminatus*, *Thryptomene minutiflora*, F.v.M., *Lissanthe strigosa*, R.Br., *Prostanthera coccinea*, F.v.M., *Solanum simile*, F.v.M., *Helichrysum obcordatum*, F.v.M., and *Leptospermum myrsinoides*, Schl. This last-named species was also found north of the Lachlan, and was previously mentioned as Tea-tree (Part iv., p. 325), but not then definitely identified.

The species of *Cassytha* growing at Wyalong is found as a parasite clinging to and often almost smothering the top of the Mallee or other bushes, the leafless vines being so numerous as in many cases to form quite a canopy. They are often known as Mallee-vines, and are useful as a fodder. The fruits are considered edible by children.

*Eriostemon difformis* flowers profusely around Wyalong in September, and contributes much to the beauty of the flora.

*Phebalium obcordatum* was found at Wyalong only, and, judging by its absence from herbaria, is evidently a plant not often met with by the collector. It is somewhat diffuse in its habit, and when covered with yellow flowers is an ornamental little shrub. Usually the colour of a flower is decided by the colour of its petals, but in this species it is from the anthers that the yellow appearance emanates, a feature, of course, not confined to this genus. I have noticed these flowers apparently change

colour after a shower of rain, but an inspection showed that it was simply owing to the removal of the pollen by the rain drops.

*Melaleuca parviflora* is fairly common around Wyalong, and in general appearance, as well as habit, is exactly similar to this species growing in the Ninety-Mile Desert, South Australia. On the coast of New South Wales it is generally a darker green, and the leaves are often more flexuose.

The Acacias around Wyalong and towards Barmedman are numerous, and include several which had not been seen along the country described to the northward, as well as one not previously recorded for New South Wales. Those noticed were:—*A. montana*, Benth., *A. microcarpa*, F.v.M., *A. rigens*, *A. aspera*, Lindl., *A. conferta*, *A. acinacea*, Lindl., *A. verniciflua*, *A. hakeoides*, *A. decora*, *A. cultriformis*, *A. Cunn.* (west of Wyalong), *A. homalophylla*, *A. pendula* (towards Barmedman), *A. Oswaldi*, *A. ixiophylla* (?), *A. difformis*, *A. dealbata* (green variety), *A. obliqua*, *A. Cunn.*, and *A. rhigiophylla*, F.v.M.

*A. microcarpa* grows as a shrub 3 or 4 feet high, spreading across the top to 4 and 5 feet. In general appearance it somewhat resembles *A. montana*, but the latter is slightly taller, not so spreading, and very viscid, while its leaves have several nerves, those of *A. microcarpa* having but the central one, and that not very prominent.

*A. rhigiophylla* occurs a few hundred yards north-westerly of West Wyalong, and has not previously been recorded for New South Wales. It was originally described from specimens collected in South Australia; but the country to the westward of Wyalong is of much the same nature as some of the eastern parts of South Australia, so the plant does not appear to be out of place in this part of New South Wales, and will probably be found to extend over a considerable area in the south-west. It grows as a somewhat spreading shrub, a few feet high, with rigid pointed leaves.

Between the two towns of Wyalong and West Wyalong, which are situated about two miles apart, the country is almost level and was formerly covered with Mallee, though some of it is now



cleared. There appear to be four species, but the scrub is made up chiefly of two, viz., *Eucalyptus Behriana* and *E. polybractea*, Baker. The other two, which are not so plentiful, are *E. dumosa* and *E. viridis*, with an occasional Box (*E. Woollsiana*) and Iron-bark (*E. sideroxylon*).

*E. Behriana* usually grows as a Mallee about 8 to 15 feet high, though in rare instances I found trees up to about 35 feet high, with a diameter of 9 or 10 inches, the bark being smooth and white, though often toning off to greenish and grey. Perhaps the most striking feature of this Mallee is that it has fairly broad, smooth, and generally shining leaves, though this latter is not so marked as in the case of *E. populifolia*. Yet to the westward of Wyalong I have collected a few specimens of this species having silvery-white powdered leaves, though on no other occasion was this glaucous form met with. The flowers of *E. Behriana* are small and the fruits almost sessile. Its timber, which is of a pale red colour, is usually too small to be of use, but from the larger trees it is sometimes brought in and used for timbering the mining shafts, though that growing near the mines on the goldfields is too small for the purpose.

*E. polybractea* has never been seen by me except around Wyalong, though it probably occurs to the westward. So far as observed it has always a glaucous appearance, and is in consequence known as Blue Mallee. If it were not for this white powder on the leaves there would be some difficulty, without examination, in separating it from *E. viridis*, and even in the herbarium specimens the similarity in buds and fruits is noticeable, but the identification is here also assisted by the glaucous appearance of the leaves. When I first found this species I adopted the method of crushing a few leaves to ascertain whether it could be separated from *E. viridis*, and soon found this could readily be done, as the Blue Mallee seems exceedingly rich in oil. In no case was this species found growing into a tree, but usually from 6 to 10 feet high and forming dense scrubs.

The Eucalypts noticed on the roadside between Wyalong and Barmedman were: - *E. dumosa*, *E. Behriana*, *E. polybractea*

(only near Wyalong), *E. melliodora* (scarce), *E. tereticornis* (Forest Red Gum), *E. conica* (scarce), *E. Woollsiana*, *E. sideroxylon*, and *E. tereticornis* var. *dealbata*.

The first three Eucalypts mentioned are Mallees, but a few trees of *E. dumosa* were noticed about 50 feet high and a foot in diameter. After passing Barmedman no more Mallee was seen, but it is to be found extending away to the south-west. Though it is very plentiful just at Wyalong, it may be said that between the Lachlan and Murrumbidgee Rivers it is not common east of a line joining Condobolin, Wyalong, Temora and Wagga, and does not come up to this line except in places.

*E. conica* was last seen at a few miles south of Wyalong, and this is probably one of its most southern points in this locality.

*E. populifolia* was not noticed south of the Wyalong district, but from this point northwards it is one of the commonest trees in the interior. Although usually known as Bimble Box, I was informed that away to the westward of Wyalong it bears the name of Minty Box, but as I did not visit the locality indicated I cannot be certain of the species. *E. populifolia* is the Box tree which usually produces such a number of seedlings after the land has been ringbarked, and in this respect is a considerable source of annoyance to the landowner.

From Barmedman to Temora is south-easterly about 20 miles, and various trees and shrubs noticed along the roadside were:—*Heterodendron oleaefolium*, *Myoporum deserti*, *Callitris calcarata*, *C. robusta*, *Casuarina Luehmanni*, *C. paludosa*, Sieb. (?), *Dodonaea viscosa*, *Exocarpus cupressiformis*, *Cassinia Theodori*, F.v.M., (Sifting Bush), *Fusanus acuminatus*, *Cassia eremophila*, *Calythrix tetragona*, *Hibbertia stricta*, R.Br., *Brachyloma daphnoides*, *Pimelea linifolia*, Sm., *Eremophila longifolia* (very scarce), *Sterculia diversifolia*, and *Indigofera australis*, Wild. On a ridge just west of Barmedman a species of *Olearia* was found, but so far not identified.

The tree mentioned as *Casuarina paludosa* (?) is found in various parts of Central New South Wales, but chiefly to the eastward of the route followed in these papers. It is doubtful



whether this is really *C. paludosa* at all, or a distinct species. I have collected it on the Harvey Range near Peak Hill, near Manildra, and on the hills around Cow Flat in the Bathurst district. It grows rather more as a little tree than a shrub, and ranges from about 6 to 12 and sometimes 15 feet high. The medullary rays in the wood, though fine, are quite distinct, while the bark is generally smooth. A feature of this species is that in all the localities mentioned it usually grows on dry ridges, and not in damp places, as its botanical name would suggest. Its affinities appear to be with *C. suberosa* on the one hand, and *C. distyla* on the other; but I have never met with either of these species between the Macquarie and Murrumbidgee Rivers. *C. distyla* is mentioned, however (B.Fl., vi., 198), as having been collected on the Lachlan by Allan Cunningham, though imperfect specimens of *C. paludosa* (?) might possibly be confused with those of *C. distyla*.

*Cassinia Theodori* is very plentiful in the Temora district, where it is known by the name of Sifting Bush. This name is suggested by the similarity of the numerous fallen florets to the "siftings" which are blown away from grain by a winnowing machine. Although only a few feet high, it forms a dense undergrowth in places where the soil is slightly inferior, often covering many acres; and in addition to affording a shelter for vermin, it sometimes encroaches on wheatfields which are adjacent to these areas.

At intervals along the whole of the route followed from Bourke, patches of a species of *Cucumis*, usually known as melons, were seen. They are found on good soil, and the vines from each plant radiate several feet, being covered with small, round melons nearly an inch in diameter, and exceedingly bitter. In the autumn when the vines are dead, and especially in times of drought when the grass has disappeared as well, these green marbles are very conspicuous, and sometimes are scattered over several acres where the vines have been numerous. So far as I could judge they seem to be untouched by stock of any kind, though recently a report came from Lake Cowal to a Sydney daily paper

that 150 sheep had died presumably from eating these wild melon seeds.

The Acacias noticed between Barmedman and Temora were:—*A. homalophylla* (only near Barmedman), *A. hakeoides*, *A. dealbata* (green variety), *A. verniciflua*, *A. flexifolia*, *A. Cunn.*, (which had just ceased flowering in September), *A. difformis*, *A. decora*, and *A. ixiophylla* (?).

The Eucalypts were represented by *E. Woollsiana*, *E. sideroxylon*, *E. melliodora* (increasing in quantity), *E. tereticornis* and var. *dealbata*, one tree of *E. affinis* and three of Ironbark Box similar to the questionable hybrid of Nymagee.

*E. Woollsiana*, which is known locally as Black Box, was being cut for railway sleepers. Finding it on a ridge near Barmedman with *E. sideroxylon*, I searched a considerable area for the questionable hybrid, and eventually found three trees fairly close together, with the bark, timber and fruits about midway between those of the other two, and corresponding with trees previously found in similar company (*vide* Part ii., p. 716, and Part iii., p. 324). I am still unable to offer any definite opinion as to what these trees really are. In a general way they seem to more nearly approach *E. sideroxylon* than any other local species, but the fruits are smaller, the bark less rough and inclined to be like that of the Box, and the wood yellowish, while they seem too scarce to represent a distinct species. In this instance, as previously, they were only found as the result of special search. Although these trees appear to be very rare, it may be mentioned that in nearly every case they have been found in twos or threes.

*E. Woollsiana*, between Barmedman and Temora, showed a distinctly glaucous appearance in September, a feature never noticed by me at any other place.

In going southerly from Temora towards Sebastopol for about 10 miles, the following plants were noticed:—*Pittosporum phillyræoides*, *Daviesia corymbosa*, Sm., var., *Myoporum deserti*, *Fusanus acuminatus*, *Cassinia Theodori*, *Callitris robusta*, *C. calcarata*, *Dodonæa viscosa*, *Exocarpus cupressiformis*, *Bursaria*

*spinosa*, *Pterostylis nutica*, R.Br., *Caladenia clavigera*, A. Cunn., and *Glossodia major*, R.Br.

The Acacias passed were *A. hakeoides*, *A. difformis*, *A. conferta*, *A. flexifolia*, *A. dealbata*, and var. (green variety).

This is the second instance in coming from Bourke that the typical *A. dealbata* has been found. Easterly and southerly from this point it becomes more plentiful.

The Eucalypts noticed southerly from Temora were:—*E. Woollsiana* (still known as Black Box), *E. melliodora*, *E. tereticornis*, *E. tereticornis* var. *dealbata*, *E. sideroxylon* and *E. macrorhyncha*, F.v.M. (Stringybark).

Over the area described in these papers this is the first record of Stringybark. This species prefers a colder climate than is found in the interior, and the fact of its being so far west as Temora is possibly owing to the influence of southern latitudes. North of the Murrumbidgee this is the most western point at which I have ever found the species; but a settler informed me that there are similar Stringybark trees on Scrubby Mountain, near Rankin's Springs, about 70 miles north-west of Temora. If this is the case, the species is probably *E. macrorhyncha*, it being by far the most westerly of our Stringybarks. The statement is probably correct, but requires investigation. The most western point in New South Wales at which I have collected this species is Albury. *E. macrorhyncha* has an extensive range in this State, and is fairly plentiful over the area which extends north and south along the Great Dividing Range, spreading sometimes to the westward and again to the eastward of the range. South of Mudgee its western boundary coincides very nearly with the eastern boundary of *E. hemiphloia* var. *albens*, except in isolated cases as at Temora, Grenfell and Manildra, where it occupies ridges to the westward. So far as my observations have gone I find that it undoubtedly prefers a geological formation of sedimentary origin, and may, therefore, often be found on goldfields in Silurian slate areas. To the miner and settler it is a most useful tree. The bark is used freely for roofing huts and out-buildings, while its timber is greatly in request in all kinds of

mining work, building and fencing. In the highlands around Bathurst it is one of the most generally useful trees the inhabitants possess, its timber being superior, both in or out of the ground, to that of many of the others growing in the same elevated localities, besides being easy to work. On the western slopes it is known as Stringybark, but often in places to the eastward it is called Red Stringybark from the colour of the wood, and to separate it from other Stringybarks which grow in the same localities and have paler timber.

From Temora to Cootamundra, viâ Springdale and Stockinbingal, is about 36 miles south-easterly, and a careful study of plants along this route will show that the western flora is being gradually left behind and replaced by some of the forms which are usually found on slightly higher levels to the eastward. Thus many trees which have been noticed along the greater part of the road from Bourke are not seen east of Temora, except perhaps in very rare instances, among others being *Hakea leucoptera*, *Heterodendron oleæfolium*, *Eremophila Mitchelli*, *Geijera parviflora*, *Casuarina Cambagei*, *Acacia pendula* and *A. homalophylla*.

Various trees and shrubs noted before reaching Springdale at 11 miles were:—*Myoporum deserti*, *Casuarina Luehmanni*, a very little of *Eremophila longifolia*, *Callitris robusta*, *C. calcarata* (generally on ridges with *E. sideroxylon*), *Dodonæa viscosa*, *Cassinia Theodori*, *Cassia eremophila*, *Bursaria spinosa*, *Fusanus acuminatus*, and *Exocarpus cupressiformis*.

Between Springdale and Stockinbingal, a distance of about 11 miles, the following were passed:—*Callitris calcarata*, *C. robusta*, *Cassinia Theodori*, *Fusanus acuminatus*, *Grevillea floribunda*, *Dodonæa viscosa*, *Bursaria spinosa*, *Casuarina Luehmanni*, *C. quadrivalvis*, *Drosera* sp., and *Eutaxia empetrifolia*, Schl.

Between Stockinbingal and Cootamundra, a distance of 14 miles, most of the land is under cultivation, but on one hill *Exocarpus cupressiformis* and *Casuarina quadrivalvis* were noticed.

The Acacias passed between Temora and Springdale were:—*A. difformis*, *A. montana*, *A. hakeoides* and *A. dealbata* (green variety).

Between Springdale and Stockinbingal there were:—*A. lakeoides*, *A. conferta*, *A. dealbata*, *A. difformis*, and *A. armata*, R.Br., the first noticed.

Between Stockinbingal and Cootamundra *A. diffusa*, Edw., was seen for the first time.

*Acacia Baileyana*, F.v.M., (Cootamundra Wattle), is fairly plentiful a few miles to the westward of the road travelled, being common along parts of the main coach road from Cootamundra to Temora; and is to botanists a most interesting species. It is now a well known ornamental tree in many gardens in various States, but there apparently was a time when it grew nowhere except near Cootamundra. From considerable enquiries made, I conclude that, prior to its cultivation, a circle with a radius of 30 miles, or perhaps less, described around a centre somewhere between Cootamundra and Temora, would have included every tree of Cootamundra Wattle in the known world. The question naturally arises whether it is a new *Acacia* which originated here, or a remnant once more plentiful, but now gradually disappearing altogether. Without a lengthy investigation, the evidence available on which to solve the matter is very slight, so that I am unable to express any opinion concerning it.

The Eucalypts passed between Temora and Stockinbingal were:—*E. Woollsiana*, *E. melliodora*, *E. hemiphloia* var. *albens* (a few trees were flowering in September, which is very late), *E. sideroxylon*, *E. affinis*, *E. tereticornis* var. *dealbata*, and *E. macrorhyncha*.

Between Stockinbingal and Cootamundra were:—*E. melliodora*, *E. hemiphloia* var. *albens*, *E. Woollsiana* (becoming scarce), *E. tereticornis*, *E. macrorhyncha*, *E. Cambagei*, Deane and Maiden, and *E. Bridgesiana*, Baker.

*E. Woollsiana* may be said to cease at Cootamundra. South of the Macquarie River the eastern boundary of this species may be roughly described by lines joining Wellington, Molong, Cudal, Canowindra, Mount McDonald, Koorawatha, Cootamundra, and Albury, passing thence into Victoria.

*E. sideroxylon* is also rare to the east of Cootamundra except in some isolated coast spots, the elevation being too great for it. Its eastern boundary, south of the Macquarie, corresponds very nearly with that of *E. Woollsiana*. It also extends into Victoria at least as far as Chiltern, showing little or no variation. The other Victorian tree, known as *E. leucoxylon*, F.v.M., though having a smooth white bark and yellowish wood, is thought by some to be the same species as the New South Wales *E. sideroxylon*, but the distinct difference in both bark and timber seems to me sufficient to show that they are separable, notwithstanding a considerable similarity in the fruits. So far I have not met with any trees showing a decided gradation from one species to the other, those which have come under my notice in the forests being either typical Ironbarks or Gums.

*E. Cambagei* is a species extending over a considerable area on the highlands of New South Wales and in Victoria, though in the latter State it is also found almost down to sea-level, which is probably another instance of the effect of southern latitudes. In the Mudgee, and Bathurst to Goulburn districts it is seldom found below an altitude of 2,000 feet above sea-level, though near Cootamundra it is growing at about 1,200 feet, and at about 550 near Albury. It is known under the names of Apple, Mountain Apple, Bastard Box, and Bundy, the latter being the local name south of Bathurst around Rockley and Burruga, where it is in considerable request as a fuel in the copper smelting furnaces. South of the Macquarie River *E. Cambagei* is seldom found west of a line joining Wellington, Molong, Cargo, Mount McDonald, Gundagai and Albury. There are, however, a few patches of it to be found west of this line, one being near Bumberry between Molong and Parkes, and that now under discussion near Cootamundra, while there are probably other small areas of it in isolated spots. In these extreme western localities it is usually found occupying the tops of hills, and is undoubtedly more in its regular home on the higher lands to the eastward. The wood of this tree is hard for a mountain species, but as the trees are seldom straight or tall the timber is not considered to be of much value. In the Bathurst



and Orange districts it may generally be found growing on ridges of Silurian slate; and although it evidently prefers a sedimentary formation, it is occasionally to be found on hills of igneous origin, though in such cases the wood often appears to be softer, probably owing to a more rapid growth through being in a better soil. In no case does it appear to grow on an alluvial flat. The bark of this tree is a dark grey, somewhat resembling a Box bark, but of a more woolly nature, toning off to smooth on the ultimate branches. It is, however, only in rare instances that it is found in company with typical Box trees such as *E. hemiphloia* var. *albens*, or *E. Woollsiana*, preferring a colder climate.

For many years *E. Cambagei* was confused in various herbaria with *E. goniocalyx*, F.v.M., but in the forest the two species are scarcely ever, or it might almost be said never, confounded. The latter is usually a large straight Gum tree, found along the south coast and in Victoria, having smooth bark and moderately hard fissile timber; while the former has more of a Box or Apple tree appearance, with hard, interlocked timber. In some cases, however, *E. goniocalyx* has a rough bark somewhat similar to that at times seen on *E. saligna*, Sm., the Sydney Blue Gum, covering the trunk almost up to the branches. I have seen this at Fern Tree Gully, near Melbourne, where my attention was drawn to it by Mr. J. G. Luehmann, F.L.S. The sucker-foliage, however, separates these two species very clearly.

The tree with which *E. Cambagei* is often confused in the forest is that named *E. Bridgesiana* by Mr. R. T. Baker (Proc. Linn. Soc. N.S.W. 1898, Part 2) and formerly recognised as *E. Stuartiana*, F.v.M., there being a fancy with many bushmen that the latter, often known as Apple, and which has a soft wood and grows on flats, graduates into the former species, which grows on the hills and has a hard wood. Botanically these two trees are very distinct, but the similarity in the bark causes the confusion among casual observers.

*E. Bridgesiana* was not met with in coming from Bourke until Cootamundra was reached. It extends, north and south, almost, if not quite, through the entire length of New South Wales,

following in a general way the course of the Great Dividing Range, being found perhaps more on its western than eastern slopes and seldom, if ever, coming down to the sea-level. It is usually known as either Apple or Woolly-butt, the former name being in general use to the south of Bathurst, while it is known by the latter name to the northward, though these names are not constantly allotted according to the above divisions. In some localities it is called Peppermint, while in others it bears the name of Box from a similarity in the appearance of the bark to some of the Box trees. It takes its name of Apple from a general outward similarity which it has to *Angophora intermedia*, DC., that species being known as Apple almost wherever it is found in New South Wales; and when these trees grow together the Eucalypt is often designated Woolly-butt by way of distinction. Although *Angophora intermedia* is plentiful all along the coastal districts, and crosses to the western slopes in many places to the northward, it is rare within that large area lying to the south of the Great Western Railway Line, and to the west of the Great Dividing Range, though it touches the boundary of this area near Wellington, and may possibly be found somewhere in the Yass and Tumut districts. Within this area *E. Bridgesiana* is usually known as Apple. But the name changes to Woolly-butt north of Bathurst and in the Rylstone district, as *A. intermedia* begins at about 7 miles from Bathurst towards Sofala and continues northwards.

*E. Bridgesiana* is generally found growing on flats, but sometimes on elevated land in basaltic country, and in the colder parts often in company with a white drooping Gum, *E. viminalis*, Labill. In habit these trees somewhat resemble each other, but the white smooth bark of the latter is very distinct from that of the former, which has a grey Box bark, usually covering all the trunk and part of the branches. Although these two species grow in company in the cold parts, it is found in going to the lower western country that the Gum ceases considerably before the Apple. The timber of this Apple-tree is considered useless, being even valueless as a fuel.

Near its western limit it is often found on the river flats in company with *E. melliodora* (Yellow Box), and reaches its most western points along the rivers to the south. From the Macquarie River southwards its western boundary may be roughly defined by lines joining Wellington, Eugowra, Grenfell, Cootamundra and Albury, although it apparently continues down the Murray at least to Mulwala, having been recorded from that locality by Mr. Baker (Proc. Linn. Soc. N.S.W. xxv., 667). It is common on the Murrumbidgee around Gundagai. It may also be seen in Victoria from the railway line at various points between Albury and Seymour.

Baron von Mueller always placed this tree under his *E. Stuartiana*, but it differs from the tree growing at Ringwood and other places near Melbourne, also included by the Baron under *E. Stuartiana*, in timber, bark and foliage, the Melbourne tree showing strong affinities to the Argyle Apple of New South Wales, *E. pulverulenta*, Sims, to which *E. Bridgesiana* shows much less, excepting in the sucker-foliage. Attention was first drawn to this difference by Mr. A. W. Howitt, F.G.S., in 1898, before a meeting of the Australasian Association for the Advancement of Science, which resulted in the New South Wales tree being described by Mr. Baker under the name of *E. Bridgesiana*.

Messrs. Deane & Maiden in their "Observations on the Eucalypts of New South Wales" have retained the name of *E. Stuartiana* for the N. S. Wales tree, and Mr. Maiden has since included the Victorian tree under the lanceolar-leaved form of *E. pulverulenta* (Proc. Linn. Soc. N.S.W., xxvi., 547).

Between Cootamundra and Juneë the following trees and shrubs were noticed from the train:—*Callitris calcarata*, *C. robusta*, *Sterculia diversifolia*, *Cassinia Theodori*, *Casuarina quadrivalvis*, *C. Luehmanni*, and *Bursaria spinosa*.

The Acacias noticed were:—*A. doratoxylon*, *A. diffusa*, *A. montana*, *A. difformis*, and *A. Baileyana*.

The Eucalypts passed were:—*E. melliodora*, *E. Bridgesiana*, *E. tereticornis*, *E. macrorhyncha*, *E. hemiphloia* var. *albens*, *E.*

*sideroxylon*, *E. affinis*, *E. Woollsiana*, *E. Cambagei* (?), and *E. tereticornis* var. *dealbata*.

*E. sideroxylon*, *E. affinis*, *E. macrorhyncha*, and trees which appeared to be *E. Cambagei* were on a ridge between Frampton and Bethungra.

Between Junee and Narrandera the following trees and shrubs were seen from the train :—*Sterculia diversifolia*, *Cassinia Theodori*, *Exocarpus cupressiformis*, *Casuarina quadrivalvis*, *C. Luehmanni*, *C. Cunninghamiana* (only seen at Narrandera on the banks of the Murrumbidgee), *Bursaria spinosa*, *Callitris robusta*, *Dodonæa* sp., *Heterodendron oleaefolium* (trees up to 18 inches in diameter), *Myoporum deserti*, *Hakea leucoptera*, *Pimelea linifolia* and *Calythrix tetragona*, the last two being collected at Narrandera.

The Acacias passed were :—*A. homalophylla*, *A. difformis*, *A. decora*, *A. pendula*, *A. montana* (?) and *A. doratoxylon*, the latter seen only at Narrandera.

*A. pendula* was only noticed in two localities, near Grong Grong, where it is locally known as Boree. In going from Sydney on the Southern line, this is the first place at which this species is met with, while on the western line it is first seen from the train near Narromine.

The Eucalypts identified between Junee and Narrandera were :—*E. melliodora*, *E. Woollsiana* (both continuing all the way), *E. tereticornis* and var. *dealbata*, *E. hemiphloia* var. *albens* (not noticed past Coolamon) and *E. rostrata*.

The complete list of Eucalypts passed between Marsden and Narrandera is :—*E. rostrata*, *E. Woollsiana*, *E. sideroxylon*, *E. tereticornis* and var. *dealbata*, *E. conica* (only in the northern part), *E. populifolia* (not plentiful), *E. dumosa*, *E. melliodora*, *E. Behriana*, *E. polybractea*, *E. viridis*, *E. affinis*, *E. macrorhyncha*, *E. hemiphloia* var. *albens*, *E. Cambagei*, *E. Bridgesiana* and a few trees of Ironbark-Box not definitely identified.

The Acacias were numerous and included *A. stenophylla*, *A. pendula*, *A. homalophylla*, *A. dealbata* and the green variety, *A. hakeoides*, *A. doratoxylon*, *A. cardiophylla*, *A. Oswaldi*, *A. rigens*,

*A. ixiophylla* (?), *A. diffusa*, *A. difformis*, *A. decora*, *A. montana*, *A. microcarpa*, *A. aspera*, *A. conferta*, *A. acinacea*, *A. verniciflua*, *A. cultriformis*, *A. obliqua*, *A. rhigiophylla*, *A. flexifolia*, *A. armata* and *A. Baileyana*.

The Casuarinas noted were :—*C. Luehmanni*, *C. paludosa* (?) (scarce), *C. quadrivalvis*, *C. Cunninghamiana* and *C. Cambagei*.

## EXPLANATION OF PLATES VIII.-X.

### Plate viii.

*Casuarina Cambagei*, Baker (Belah), Gilgandra, N.S.W.

### Plate ix.

*Geijera parviflora*, Lindl., (Wilga), Gilgandra, N.S.W.

### Plate x.

Fig. 1.—*Eucalyptus Woollsiana*, Baker (Black or Narrow-leaved Box), Forbes, N.S.W.

Fig. 2.—*Eucalyptus conica*, Deane & Maiden (Apple Box), Forbes, N.S.W.